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L8

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DB=USPT; PLUR=YES; OP=ADJ

<u>L8</u>	L7 and (stor\$3 or enclos\$3 or encod\$3) same (timestamp\$3 or time-stamp\$3)	3	<u>L8</u>
<u>L7</u>	L2 and calculat\$3 same locat\$3 same (vehicle or car or automobile)	219	<u>L7</u>
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<u>L5</u>	L4 and (stor\$3 or enclos\$3 or encod\$3) same (timestamp\$3 or time-stamp\$3) same (database or network\$3)	0	<u>L5</u>
<u>L4</u>	L2 and (stor\$3 or enclos\$3 or encod\$3) same (timestamp\$3 or time-stamp\$3) same (database or network\$3)same calculat\$3 same locat\$3 same (vehicle or car or automobile)	0	<u>L4</u>

DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ

<u>L3</u>	L2 and (stor\$3 or enclos\$3 or encod\$3) same (timestamp\$3 or time-stamp\$3) same (database or network\$3)same calculat\$3 same locat\$3 same (vehicle or car or automobile)	1	<u>L3</u>
<u>L2</u>	(340/901 OR 340/988 OR 340/905 OR 340/989).CCLS.	2376	<u>L2</u>
<u>L1</u>	(stor\$3 or enclos\$3) same (timestamp\$3 or time-stamp\$3) same (database or network\$3)same calculat\$3 same locat\$3 same vehicle	5	<u>L1</u>

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L8: Entry 2 of 3

File: USPT

May 21, 2002

DOCUMENT-IDENTIFIER: US 6393346 B1

TITLE: Method of monitoring vehicular mileage

Abstract Text (1):

A navigational system and a computer-based datalogger are used to store data on the distances traveled by and places visited by a monitored vehicle. The datalogger includes a clock and an on-board memory that can store time-stamped records of the latitude and longitude of places visited by the vehicle. In some such systems the vehicle operator can assign a label or a location classification to selected places that he or she visits. Additionally, in some versions of the system an administrator can use a central computer located at the vehicle's home base to assign labels to locations where the vehicle is expected to make a stop. The central computer generates a map-like graphical output that displays a point corresponding to each of the places visited. This display may also show the time spent at each place visited during an operational period.

Brief Summary Text (14):

The present invention provides a system and method for recording the distances traveled and the places visited by a monitored vehicle equipped with a navigational receiver and a computer-based datalogger having a clock and an on-board memory so that the datalogger can store time-stamped records of the latitude and longitude of places or destinations visited by the vehicle. In some embodiments of the invention an input means is provided for the vehicle operator so that he or she can assign a label or way point identifier to each one of the destination visited. Additionally, in other embodiments an administrator can use a central computer located at the vehicle's home base to assign labels to predetermined locations to be visited by the vehicle. Means are provided for communicating the set of time-stamped records from the vehicle to the central computer as well as communicating any administratively assigned labels from the central computer to the on-board datalogger. The central computer operates under software control to generate a map-like graphical output displaying a point corresponding to each of the destinations by the vehicle visited. In a preferred embodiment the computer also displays the time spent at each destination during an operational period. An operational period begins when the vehicle leaves the home base and ends when the vehicle returns to the home base. A preferred display includes means of visually distinguishing between labeled and unlabeled destinations.

Detailed Description Text (2):

A system of the invention 10 comprises a navigational transmitter or transmitters 12, which are preferably satellites comprising a portion of the Global Positioning System (GPS), but which may also be LORAN transmitters, local low power radio transmitters or the like. Signals, which commonly comprise both a positional and a temporal component, are received and stored by the on-board portion 14 of the system 10. A monitored vehicle 18 carries the on-board portion 14, which is preferably adapted to include a navigational receiver 16 made by either the Trimble Company or by the JRC Corporation. An output from the receiver 16 is supplied to an on-board computer 20 (which preferably comprises an Intel Model 80C186 microprocessor) having on-board memory 22, a manual input means 28 and optional timekeeping means 24 operatively associated therewith. It may be noted that in the preferred embodiment, in which the GPS navigational system is used, the system can rely on the time code portion of the GPS signal when generating one of the time-stamped records of latitude and longitude stored in the log file. In this case, the time-keeping means 24, while conventionally a portion of commercially available computer motherboards that may be selected for the on-board computer 20, is not necessarily involved in the routine data collection process. On the other had, if the system uses a different navigational system that does not provide a time code, then the separate time-keeping means is necessary. The manual input means 28 of the preferred embodiment may comprise a keyboard or keypad (if detailed labels are to be

supplied by an operator, as disclosed hereinafter). and a dump button (used during off-loading of data as will be hereinafter disclosed). Alternately, the manual input means 28 may comprise a dump switch and a separate way point indication button used to designate a visited site without providing detailed information associated therewith.

Detailed Description Text (5):

An overview of the operation of the on-board portion 14 of the system is schematically depicted in the flow chart of FIG. 2. After a start and initialization step 40 an endless loop operation begins by checking to see (Step 42) if data is to be communicated to the base computer 30. If so, the data is uploaded and the log file is reset in Step 44. The log file, stored in the on-board memory, contains a plurality of time-stamped records. In a preferred embodiment, at least two types of time-stamped records are stored in the log file. A first, location record comprises location data (e.g., latitude and longitude) and the time at which the location data was collected. As is well known in the navigation systems art, a sequential collection of records of this sort can be collected at regular time intervals, or regular distances along the path of travel (e.g., as determined from an odometer), and can be used to calculate the route followed by the vehicle 18. A second, record comprises a waypoint along with the location data destination for the vehicle, i.e., a business stop, and the time at which that identifier was stored. The record may include also additional manually input textual data that the operator of the monitored vehicle wishes to have associated with that visit to that destination. It will be understood that a destination record could also include location data, if desired. If the location records provide a fine enough temporal or spatial resolution, the location data may be omitted from the destination records and the location data in the location records used instead.

Detailed Description Text (7):

If the on-board computer 20 is not being commanded to upload data, it receives input from the navigational receiver 16 (Step 46) and then checks (in Step 48) to see if the operator of the monitored vehicle is indicating by the manual input means 28, that the vehicle is at a way point destination which is expected to usually be a location at which some sort of business dealing (e.g., a sales call or a product delivery) is to occur a trip of a first type. If so, the time-stamped location data and the waypoint identifier data are stored in the log file. If not, a counter is incremented (Step 52) and a time-out value is checked (in Step 54) to see if a maximum predetermined interval between data collection instants has been attained. If a predetermined data collection interval has expired, then the location data is stored (Step 56) in the log file and the interval counter is reset. It will be recognized that this process of collecting data when a predetermined event occurs, or, alternately after a predetermined interval during which no predetermined event occurs is well known in the art, and that although the preceding explanation invokes a "counter" this function is conventionally provided by software programs running in the on-board computer. As will be hereinafter disclosed with particular reference to a use of the system of the invention to monitoring performance of a vehicle operating on a fixed route (e.g., a municipal bus), the manual input means 28 may be removed from the vehicle subsequent to an initial trip in which identifier data was entered.

Detailed Description Text (11):

An important application of the system of the invention is that of recording the distance traveled by a vehicle for tax-reporting purposes. This can be of particular concern in cases where the vehicle in question is a private automobile that is used partly for business use and partly for the personal use of its owner and driver. In this case the owner of the vehicle must commonly provide documentation to the tax collecting authorities as to the distance driven for business purposes, and must provide a clear distinction between a trip made for business and trips made for other purposes. In a method of recording business distance traveled, a small business owner who made repeated business trips among a plurality of client locations and who also used his vehicle for personal use would initially identify his or her home base location to the measurement system. Subsequently, he or she would use the input means 28 (which in this case could be a simple momentary contact push-button switch) to designate that a given location at which the vehicle stopped for greater than a predetermined minimum interval was a place at which business was transacted (e.g. a customer's premises) and was one terminus of a business trip, or a trip of a first type. Locations where the monitored vehicle stopped (e.g., when the engine was turned off, or when a separate speed sensor (not shown) indicated a stop, or when a plurality of navigational fixes indicated that the vehicle had remained at the same location for some predetermined interval), but at which the designation button was not actuated would, of course, also be available from the log file and indicate a trip of a second type. For example, if a ignition sensor is used by the system a "stop record", can be

written into the log file. In what is expected to be the more common situation, in which no separate stop-indicating sensor is employed, a sequence of location records associated with the same location (within the precision of the system) would be indicative of a non-waypoint stop. On returning to the home base the user could employ the base computer to generate a graphical display from the vehicle history file, as explained above, and could then manually label the ones of the heretofore unidentified designated sites that were visited for business purposes as trips of the first type. At the end of a reporting period (e.g., weekly or monthly) the distance-traveled algorithm 66 would be invoked to identify all business trips or trips of a first type (i.e., those having a designated waypoint as one terminus and either a second designated terminus or the fixed base as the other terminus), calculate the distance for each such trip, and accumulate and report the total distance traveled for business purposes.

Detailed Description Text (12):

In another important use of the invention, either or both of a time-clock function and out-of-route stop monitoring can be performed by an administrator who may or may not be a vehicle operator (e.g., the owner of a small business that has one or more employee-operated service vehicles making calls at customer-specific locations). Because the time at which the monitored vehicle stops at a location and the time at which it leaves are both known the base computer can calculate the time spent at the location from the vehicle history file. Thus, the billable time spent at customer service location (e.g., by an air conditioning repair technician) can be reported by the system and used as either an accuracy check on manually entered time records kept by the employees involved or as a primary means of accumulating billable time to a customer during a billing period. Moreover, because the system informs the administrator of all stopping periods regardless of whether they have been labeled or not, the administrator can discover and investigate out-of-route or trips of a second type made by the monitored vehicle. For example, a pest control company could use the system of the invention to identify an employee's unauthorized use of the company's vehicle and supplies in a sideline business in which the employee pocketed all the unreported revenues.

Detailed Description Text (14):

Data collected from a vehicle may also be displayed on a map. In one approach to this, the system can be configured to read the collection of time-stamped position data into existing GPS mapping software at a speed that is about fifty to sixty times faster than the actual data collection time (e.g., one point per second instead of one per minute). This approach, which requires map data stored on a CD-ROM or other high capacity storage medium, is desirable if considerable detail is needed or if various levels of detail are to be displayed during the analysis (e.g., zooming into a selected portion of the map). In other cases where repeated analyses are to be done on a single map, other map-overlay approaches (e.g., using Excel.RTM. to display the single map as "wallpaper" with two fixed data points tied to points on the map) can allow for operation with relaxed requirements for data storage capacity.

Current US Cross Reference Classification (2):

340/988

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L8: Entry 1 of 3

File: USPT

Jun 18, 2002

US-PAT-NO: 6407712

DOCUMENT-IDENTIFIER: US 6407712 B1

TITLE: Rearview mirror with integrated microwave receiver

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw Desc	Image
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☒ 2. Document ID: US 6393346 B1

L8: Entry 2 of 3

File: USPT

May 21, 2002

US-PAT-NO: 6393346

DOCUMENT-IDENTIFIER: US 6393346 B1

TITLE: Method of monitoring vehicular mileage

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw Desc	Image
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☐ 3. Document ID: US 6101390 A

L8: Entry 3 of 3

File: USPT

Aug 8, 2000

US-PAT-NO: 6101390

DOCUMENT-IDENTIFIER: US 6101390 A

TITLE: Calibration table generation for wireless location determination

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw Desc	Image
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